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Changing Climate in a Complex Organization: Interactions between a Learning Design and An Environment

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This study contributes to the growing evidence relevant to the "laboratory approach" to organization development (OD). A pilot study revealed major changes in the climate of a small organization unit following exposure to a learning design derived from the laboratory approach. This replication applies the design in a more complex organization and yields a similar pattern of changes in climate which are smaller in magnitude. The results seem to re-

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flect the consistent power of the design, as moderated by the harsh environment within which the present target units of organization existed.

A pilot study implied the usefulness of a learning design based on the laboratory approach for inducing changes in interpersonal and intergroup relations in a work-setting—changes which persisted over an extended period of observation [4, pp. 79-93; 6, pp. 530-540; 9]. In that study, a small population of middle-managers at three hierarchical levels was exposed to a learning design built around a week-long experience with values, attitudes, and behavioral skills consistent with the laboratory approach. The spirit of the experience was to enlarge the alternatives that managers perceived as available and useful for guiding their interpersonal and intergroup relations at work. The goal was to encourage applications of the off-site learning to relationships at work, with both superiors and peers. Anticipated changes occurred in the organization's climate in almost all observations, and usually at statistically significant levels.

EXTENDING THE PILOT STUDY

This article extends the pilot study in four major senses. First, it replicates the training and research design in an uncongenial business environment. Briefly, the target units here were "stability-oriented" or even "survival-oriented" because their markets had, at least, matured and seem to have declined. Indeed, their hope was that an inevitable reduction-in-force could be achieved by normal attrition. The target units in the pilot study, in contrast, experienced such growth that a 25 percent increase in managers was necessary during an 18-month period.

The stability-oriented units were expected to be more difficult change targets than the units in the pilot study; i.e., the learning design could encourage authentic, open, and trusting relations, but the harsh environment would induce powerful forces in opposition. Hence, this replication adopts a modest definition of a successful effort at planned change: the basic pattern of change in this study should be the same as in the pilot study, but less massive changes are expected.

Second, this research deals directly with three hierarchical levels and also involves three additional higher levels at various stages in the training design. The pilot study emphasized two hierarchical levels and involved a third level less directly. Laboratory approaches to OD must face the issue of the transfer into complex organizations of learning gained in small units. This research faces that issue more directly than the pilot study.

Third, the basic research design here is a time series, which admits less interpretive ambiguity than the design used in the pilot study [2, pp. 212-242].

Fourth, this research tests the replicability of the common training design by using different staffs and different sites. The training design in the pilot study was monitored by a single pair of consultants at one site during a single week. Five different pairs of four consultants monitored the common training design in this research, at five different locations during a 3-month interval. This feature permits an estimate of the degree to which any observed effects can be attributed to the training design, as opposed to the styles of the trainers or the time of training.

A SKETCH OF THE TRAINING DESIGN

Because the training design has been described elsewhere, three broad emphases suffice to highlight its major properties [5, pp. 18-23]. In order, these emphases include: (1) a description of the formal structure in which the experimental population of managers was tested; (2) a schedule for gathering data as well as for training; and (3) a brief rationale for the "total reinforcement" element in the training design.

Formal Structure Targeted for Change

Figure I depicts the six hierarchical levels and nine units which were originally involved in the present attempt to change the climate of a complex organization, National Field Sales.[1] The basic underlying concept was the creation of interlocking teams—eight teams, each composed of a divisional manager and his several regional managers, each of which was represented in an upper-level team including all of the divisional managers and the Manager, Field Sales and Service. Figure I illustrates the notion of interlocking teams.

Looking upward from the perspective of the regional and divisional managers, the top four levels of managers were viewed in two distinct ways at the same time. On the one hand, they were seen as concerned and caring about the training design. The top managers had previously been exposed to sensitivity training experiences; they generally supported laboratory values as guides for interpersonal and intergroup relations and they patently were willing to commit substantial resources to developing attitudes and behavioral skills in themselves and in other managers that

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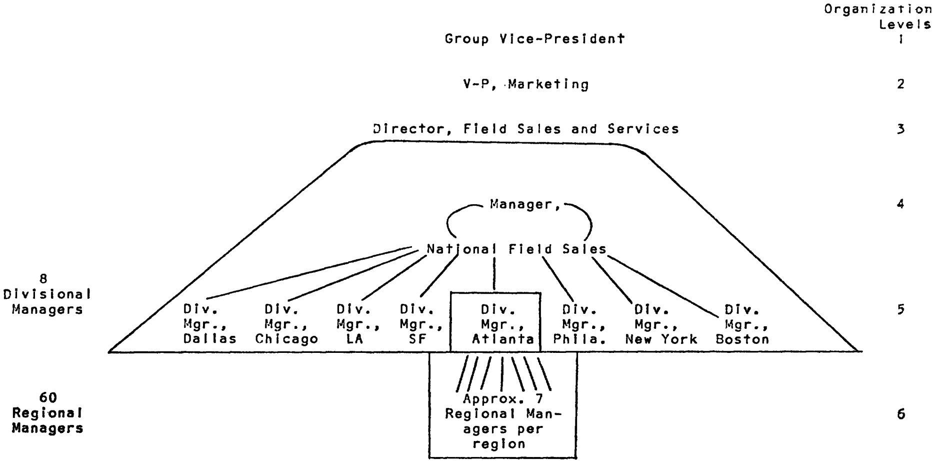
[1] Data are available for only six units for the full duration of the study. Los Angeles and San Francisco were reorganized into a single unit about midway in the study, a change due to errors in long-run forecasts about markets and triggered by a set of unexpected opportunities. A separate program of organization development, also based on the laboratory approach, was inaugurated for the newly-created unit. The third unit, Boston, was excluded because its regional manager had to be replaced due to a serious turn in a long-term illness.

FIGURE I

The Complex Organization Unit Involved in the Training Design



would permit approaching the values of the laboratory approach at work. On the other hand, the top managers also were viewed with varying degrees of incredulity and lack of trust.

Schedule for Training and Gathering Data

Figure II presents a flow-chart of the major scheduled events in both training and observation. Note that the training design followed the hierarchy, building upon sensitivity training experiences for organization peers. Thus, hierarchical Levels 1-4 in Figure I had laboratory experiences in the 12-18 months preceding the training design sketched in Figure II. Managers at Level 5, the divisional managers, were exposed to sensitivity training during days 15-20 of the schedule in Figure II. All regional managers (Level 6 in Figure I) subsequently had a similar experience, at one of four separate sites.

The common design of the sensitivity training experiences emphasized values and skills appropriate for enhancing the quality of feedback in the organization, with the prime goal of improving communication within and between hierarchical levels. The purpose was to provide experiential learning with the values of the laboratory approach, as well as to begin building appropriate attitudes and behavioral skills that could be transferred into work-relations.

The 43 managers at Levels 5 and 6—from the six units of the original nine with which the study began— provided all research data. The managers reported on the impact of the training design on organizational climate as measured by six administrations of Likert's "Profile of Organizational Characteristics," Form S.

FIGURE II

A Flow-Chart of the Training and Observation Schedule

Observation I (Likert Profile)	*Training Design Replication I*	*Observation II (Likert Profile)*	*Training Design Replication II*	*Observation III (Likert Profile)*
All Divisional and Regional Managers	Divisional Managers at site A	All Divisional and Regional Managers	Regional Managers —Dallas and Chicago at site B —LA and SF at site C	All Divisional and Regional Managers
	Confrontations with: Director, Field Sales and Services Manager, National Field Sales		Confrontations with: Manager, National Field Sales Appropriate Divisional Managers	
Day 1	Days 15-22	Day 45	Days 50-65	Day 80
Training Design Replication III	*Observation IV (Likert Profile)*	*Observation V (Likert Profile)*	*Reinforcement Session*	*Observation VI (Likert Profile)*
Regional Managers —Atlanta and Phila. at site D —New York and Boston at site E	All Divisional and Regional Managers	All Divisional and Regional Managers	President V-P, Marketing Dir., Field Sales and Services Mgr., Nat'l. Field Sales All Divisional Managers All Regional Managers	All Divisional and Regional Managers
Confrontations with: Manager, National Field Sales Appropriate Divisional Managers				
Days 90-110	Day 140	Day 200	Days 200-202	Day 245

Second, the initial learning in T-Groups was tested in "confrontations" between hierarchical levels [3, pp. 525-547]. Basically, the concluding 1½ days of the training design permitted managers to raise interpersonal and intergroup issues with their superiors. At least two levels of the supervisors were available during each replication of the training design. Figure II provides the details. Individual confrontations were arranged by the trainees, within a common framework, and there were as many patterns as there were cases. Interpersonal and intergroup relations were discussed in a wide variety of formations—sometimes in pairs of individuals, sometimes in pairs of groups, sometimes with several overhead managers present at the same time, and sometimes with only one overhead manager present. The problem dictated the learning formation, as limited by the risk/benefit ratio perceived by the managers.

Reinforcing Systemic Change

Consultants anticipated that the impact of the training design would be vitiated because the training was done in small units at multiple sites over an extended period. Directly, the target was systemic change in values, attitudes, and behaviors. But the training was accomplished in nine subsystemic units at five locations. This sets limits on "behavioral contagion," in which one's experiences are amplified or heightened because they are clearly shared by relevant others. Some contagion was achieved by pairing groups of regional managers, but there was little direct sharing of experiences between the four pairs of regional groups and between the regional groups and the group of divisional managers. Not really knowing what one's managerial colleagues felt about the training design would tend to moderate the commitment of each manager, in short, and, hence, of all managers.

The Reinforcement Session scheduled for days 200-202 in the training design provided a community forum to test two crucial systemic aspects of the training design; i.e., the session would test the degree of commitment to new attitudes or values that had been developed by individuals in subsystemic units. Moreover, the Reinforcement Session also would provide an arena to test the degree to which the actual behaviors of peers and organizational superiors were consistent with laboratory attitudes or values.

The Reinforcement Session had five major planned stages, extending over 2 days. They are:

(1) A public opening session with top management, which proved to be an unexpected learning opportunity when a regional manager drew attention to an on-going violation of laboratory norms by top management, which yielded eventual agreement that "this live example shows how difficult what we are trying to do is, despite our best intentions";

(2) A brief public overview of the overall changes in managers' responses on five administrations of the Likert Profile;

(3) An extensive private review by each of the 8 groups of regional managers and by the group of divisional managers of their individual records on each of the Likert Profile items, using summary data reported on large charts which were the private property of the individual groups (the divisional managers first met to discuss their record qua group, and later met with their individual groups of regional managers);

(4) A public report by each of the 8 groups of regional managers, which used "force-field analysis" as a conceptual device[2] for focusing on:
   (a) the specific forces which, over the past 245 days, had permitted their regional group to more closely approach the values of the laboratory approach; and
   (b) the specific forces that were yet to be overcome, or which might never be overcome; and

(5) A brief closing session in which the Manager of National Field Sales underscored his strong support of the change program and pledged resources to organization units or individuals who would be interested in specific extensions of the training design for their own purposes.

The four consultants perceived major risks in the Reinforcement Session, especially in the last two stages which, at their worst, could have been a saccharine experience. But, the logic of the laboratory approach was followed, and the brief reports seemed to be realistic reflections of the different training experiences of the groups reporting to division managers. The reports also seemed to be gratifyingly insightful analyses of the factors underlying these differences. Consultants read the reinforcement design as a success; one confirmed by evidence that most of the units headed by divisional managers decided in the following months to extend their initial training in diverse ways.[3]

SOME PROPERTIES OF THE RESEARCH DESIGN

Five elements of the research design usefully serve as a prelude to the following analysis of the program to change the climate of a complex organization. Basically, the observations of change constitute a "time series" design without a constant control group, as Figure II reflects. For example, the design for the Dallas group of regional managers may be generalized as $0_1 0_2 X\, 0_3 0_4 0_5 0_6$, where 0 = observation and X = training intervention. For a variety of reasons, and especially because of the success of the pilot study, management rejected a placebo for part of the managerial population. The cost is clear—basically, any effects observed in a time series may be explainable in terms of hypotheses alternative to the experimental treatment [2, pp. 212-242].

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[2] This is a Lewinian construct. See NTL Institute for Applied Behavioral Science, *Reading Book* (Washngton, D. C.: 1965).

[3] The designs were diverse, including team-building at lower levels, third-party consultations, confrontations between units scheduled for reorganization, etc.

The basic research strategy of replication, as opposed to strategy of emphasizing experimental controls, has complex roots. In part, the strategy rests on convenience or necessity, as in the general difficulty of providing controls in field studies, or as in the specific case of top management's rejection of a placebo for part of the managerial population. In part, also, the rationale reflects the difficult issues that are associated with "control groups" or "matched groups" in research [1, pp. 28-40].

Second, the staggered training design did generate a diminishing quasicontrol group, which still had not been exposed to the training experienced by an enlarging experimental population. For example, referring to Figure II, until Day 50 such a distinction can be made in the total managerial population:

(1) Experimental group: divisional managers
(2) Quasicontrol group: all regional managers.

Between Days 90-115, the experimental group expands and the quasicontrol group loses approximately half its population.

The practical need to stagger training experiences has mixed consequences. To some degree, this feature augments the power of the time series design and helps make less credible explanations of observed effects in terms of hypotheses alternative to the experimental treatment. The major disadvantage of the staggered training design is also clear. Any observed effects will be interactive consequences of a common design, a different consulting team, and a time of training. To some degree, of course, these effects can be statistically isolated.

Third, the observational schedule calls for six closely spaced administrations of the Likert "Profile of Organizational Characteristics," Form S. Form S contains 18 items which attempt to tap 6 basic processes: (1) leadership, (2) motivation, (3) communication, (4) decisions, (5) control, and (6) goals [7]. Each item is rated twice on each administration:

(1) as *Now,* or where the respondent perceived that National Field Sales organization actually was on each of the 18 items; and
(2) as *Ideal,* or where the respondent desired that National Field Sales organization ideally be on each of the 18 items.

The constant reference was the systemic set of interpersonal and intergroup relations in National Field Sales.

Fourth, individual respondents were identified only as members of divisional or regional units. Anonymity was considered crucial by management, which is one sign of the perceived pretraining climate. Anonymous responses required the use of statistical techniques which make significant demands on the data. Identification of individual respondents would have permitted comparisons of changes over time by more straightforward techniques.

These properties of the research design imply two major conclusions. Basically, this research may be located at the "natural history" stage of empirical inquiry, whose products are "more-or-less" qualitative classifications of factors that "more-or-less" seem to occur together [8]. Specifically, the gross focus here is on whether a specific training design tends to induce similar and expected effects in six interlocking teams of managers. This is necessary preparation for the deductively formulated theories that may follow. But the present research pays a price in significant conceptual and operational lacunae in its approach. For example, the present research design looks at one input (training design) and one kind of output (changes in responses to Likert Profile items). This focus neglects some potentially significant intervening variables, such as differences in the individual managers and their life histories, which could significantly influence reactions to the training experience.

DATA ANALYSIS

Data generated by six administrations of the Likert Profile indicate that systematic and expected changes took place in the target units. The data relate to two basic questions. First, did any systemic changes take place in the climates of the organization units involved in the research? Second, can these changes be meaningfully said to result from the training design? The data imply that both questions should be answered affirmatively.

Five specific expectations about the impact of the training design on climate are tested here. The first expectation tests the proposition that any observed effects were due to the training design rather than to independent and on-going organizational processes. The latter four expectations were based on the results of the pilot study. Overall, similar effects on "Now" and "Ideal" scores were expected. Specifically:

(1) Self-reports on the Likert Profile will tend to remain the same or decrease[4] for all organization units in observations before they

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[4] Note that an "increase" or "decrease" in a Likert score is to be understood as a change toward or away from the System 4 portion of the Likert Profile. To explain, Likert's conceptual scheme is built around a continuum of four basic organizational "systems" or "types"—(1) exploitative authoritative, (2) benevolent authoritative, (3) consultative, and (4) participative group—and each Likert item is anchored by four descriptive statements relating to each type. The closer the organization approaches the participative group segment of the continuum, the more open its climate is considered to be. Each item on the Profile is scored from 1 to 20, with 20 being the extreme score of the participative group system of organization. The present learning design is intended to induce changes in interpersonal and intergroup relations that trend toward System IV.

are exposed to the initial training experience. These cases may be considered a quasicontrol population of decreasing size over time.

Statistically significant changes are not anticipated, but they should be associated with decreases if they are observed.

(2) Self-reports on the Likert Profile will tend to increase for all organization units in managerial responses immediately following the initial training experience. These cases may be considered as an experimental population of increasing size over time.

(3) Self-reports on the Likert Profile, on balance, will show mild regression in the second and succeeding observations after the initial training experience. This mild regression is a kind of post-learning slump, and showed up clearly in earlier studies.

Statistically significant changes are not anticipated, but they should be associated with decreases in Likert scores if they are observed.

(4) Managerial self-reports on the Likert Profile will tend to increase for all organization units after the common Reinforcement Session.

(5) The divisional managers will tend to show a more positive pattern of changes on their Likert self-reports than the regional managers. The underlying rationale is that the divisional managers, who are few in number and who spend more time together, will be in a better position to test top-level commitment to change, as well as actual behavioral change, in the total system National Field Sales. Divisional managers also will be more able to validate one another's perceptions of intended and actual changes than will the more numerous and geographically-dispersed regional managers.

Statistically significant changes are not expected. but they should be associated with larger scores for divisional managers if they are observed.

OVERALL CHANGES, BY UNITS

Table 1 begins the task of establishing that the expected pattern of changes did occur. To begin, a rough picture of post-treatment trends by considering the mean scores on the eighteen items is presented. The conventions are direct: the X's indicate the timing of the three replications of the initial training design, and the R's designate the common Reinforcement Session.

The data in Table 1 provide a general test of the effects of the initial training and of the Reinforcement Session. Based on the pilot study, Expectations 2 and 4 above indicate that the training design should generate increases in Profile scores at 24 points, two for each unit on both the Now and Ideal scores. These points are: (1) after vs before the initial training intervention (X) for each unit on Now and Ideal scores; and (2) after vs before the Reinforcement Session (R) for each unit on Now and Ideal scores.

TABLE 1

Mean Scores on 18 Items of Likert Profile over Six Administrations

		Observations—Now Scores									
		1		2		3		4	5		6
	1	12.6	X*	13.4		13.9		13.7	13.6	R**	14.9
Organization	2	11.5	QC***	10.3	X	11.4		11.5	10.3	R	12.0
	3	13.0	QC	12.2	X	13.0		13.0	12.6	R	13.6
Units	4	12.4	QC	11.7	QC	11.2	X	12.2	12.6	R	12.3
	5	12.5	QC	11.8	QC	12.1	X	12.0	9.8	R	12.7
	6	13.3	QC	11.9	QC	10.5	X	13.7	13.9	R	14.5
		Observations—Ideal Scores									
		1		2		3		4	5		6
	1	15.9	X	16.9		17.9		17.2	17.2	R	17.9
Organization	2	17.6	QC	17.7	X	17.8		18.1	17.9	R	18.5
	3	17.0	QC	16.7	X	17.7		17.5	18.1	R	17.7
Units	4	17.0	QC	17.2	QC	16.9	X	17.4	18.0	R	17.7
	5	16.2	QC	15.7	QC	16.3	X	16.3	14.9	R	16.8
	6	16.7	QC	16.4	QC	16.8	X	17.5	17.6	R	17.6

* X = Initial training intervention.
** R = Reinforcement session.
*** QC = Quasicontrols.

The means in Table 1 show that the expected increases in profile scores did follow the training intervention and the Reinforcement Session in 18 of 24 cases. The pattern of increases is more marked for Now scores, where 10 of the 12 cases meet expectations. For Ideal scores, there are 8 increases and 2 ties in the 12 cases. The data thus suggest that increases in Ideal scores are triggered by anticipation of the training design, while increases in Now scores follow it.

The magnitude of the changes in Table 1 is patently small, but gross data do not permit a direct interpretation. Basically, Observation 1 does not provide a reliable base-line against which to judge change. Note that in seven of the eight cases labelled QC in Table 1, Now scores decrease in self-reports from managers in units which had not yet experienced the training intervention. There are at least two possible interpretations of this pattern: (1) that managers were no longer inflating scores to protect themselves or their managers; or (2) that interpersonal and intergroup relations were worsening over time. In either case, the observed changes in Profile scores bucked long-run trends underway in the organization that were independent of the training design.

Moreover, the data in Table 1 seem to be generated by nonrandom forces working in the expected direction. Page's *L* supports this conclusion—this statistic tests for linear trends in ordered data. Here, the statistic tests whether the scores on the second observation are greater than those on the first, whether the scores on the third are greater than on the second observation, etc., against the null hypothesis that the data contain no systematic pattern of differences. In the present case, the values of Page's *L* for both Now and Ideal scores reject the null hypothesis. For Now scores, the probability that the changes in Table 2 are random is less than 0.01; the value of Page's *L* for Ideal scores surpasses the 0.001 level.

The two values of Page's *L* provide support for expectations 2 and 4 above and imply the power of the training design to induce the intended effects. The interpretation of the present value for Page's *L* is not merely that the probability is very strong that a nonrandom trend of increasing scores exists in the data, however. Page's *L*-statistic no doubt actually understates the actual trend; i.e., major positive changes for all organization units were not anticipated until all units had their training experience, which would first happen at the time of Observation 4. Only Unit 1 should show increases in Profile scores beginning with Observation 2, to put the point otherwise. Patently, the changes in Profile scores after the training intervention and the Reinforcement Session were great enough to overbalance the fact that the staggered training design was not extended to all organization units until midway in the observational schedule.

ITEM-BY ITEM CHANGES, BY UNIT

An analysis of item-by-item changes is necessary to demonstrate that the intended effects actually did occur and that demonstration must be involved. The data come from a large table with 3,240 cells, 18 Likert Items x 6 units x 2 kinds of Likert scores x 15 paired-comparisons of observations 1-6. That table is not reproduced here, for obvious reasons, but its major trends will be spotlighted. Duncan's Multiple-Range test provides a standard against which to judge the magnitude of the differences, even though it is a very conservative indicator of statistical significance for present purposes.

Expectation 1

The data indicate that self-reports on the Likert Profile items remained constant or decreased for all organization units in self-reports from managers before their exposure to the initial training experience. In summary, over 74 percent of the Now scores show a decrease or no change in score for the quasicontrols, comparing Observation 1 to all other Likert scores obtained from managers before they underwent their training experience. If only "large changes" are considered, the case is even clearer. Arbitrarily, a large increase (decrease) is defined as a change $\geq +1.0$ (≤ -1.0) on a mean Profile score. Only 21 of 198 paired-comparisons show large increases on the Likert scores for the quasicontrols. The data do show 109 large decreases, in contrast. Two of the decreases achieved the 0.05 level, by Duncan's Multiple Range test, while none of the increases in Profile scores did so. For Ideal scores, the distribution is approximately 50/50, with no statistically significant differences. This pattern suggests that Ideal scores had a greater apparent tendency to increase in anticipation of the training experience, while Now scores strongly tended to decrease until after that experience.

Thus, interpersonal and intergroup relations were stable and probably worsening in the six organization units, as measured by the Likert Profile. This supports Expectation 1, above, whether the climate was actually worsening or whether managers simply were more realistic in describing the climate of National Field Sales. Consequently, any increases in Likert scores cannot easily be attributed to on-going maturational processes or historical events independent of the training design. In fact, the training design had to buck a substantial trend.

Expectation 2

The data reflect a strong overall tendency for Likert scores to increase for all managers in the observation immediately following their exposure to the training design. That pattern was especially dominant if one deviant organization unit is an exception. This strong tendency implies the usefulness of the training design, even in the harsh business environment in which the 6 units existed.

Supporting data may be sampled. For the Now scores, 82 percent of the paired-comparisons showed increases in Profile scores in the observation immediately after the training intervention, as contrasted with the observation immediately before. In addition, over half of the decreases or no-changes occurred in Unit 5. For the Ideal scores, the pattern was similar but a little less marked: 70 percent of the comparisons showed increases after exposure to the training experience. Unit 5 was, again, deviant, accounting for nearly 40 percent of the decreases or no-changes in Profile scores.

Again, the pattern of change is more consistent than its magnitude is great. For example, only 8 of the 216 relevant cases attain statistical significance, as determined by Duncan's Multiple-Range test.

Expectation 3

Self-reports on the Likert Profile showed a definite tendency to regress in the observations following the initial training experience. Like the decreases in the pilot study, these regressions typically did not attain usually accepted levels of statistical significance.

This replication generated data which are consistent with the pilot study and which support Expectation 3. Specifically,

(1) 51 of 108 changes were negative, comparing the second observation after the experimental treatment with the preceding one; and

(2) 34 of 108 changes were negative, comparing the second observation after the experimental treatment with the preceding one.

Only 2 of the decreases achieve statistical significance, as measured by Duncan's Multiple-Range test. No increase achieved the 0.05 level.

The direction of the changes, then, supports Expectation 3 above. However, the magnitude of the changes is such that they cannot unqualifiedly be attributed to nonrandom causes.

The regression erodes only part of the increases in Profile scores following the initial training experience, as in the pilot study. The generalization holds for all organization units, and especially so if Unit 5 is again recognized as a deviant case. Comparisons of Observation 5 to the various observations immediately preceding the initial training experience for the various units help establish the point. Approximately 70 percent of the 216 relevant comparisons still show greater scores for Observation 5, although only 12 of the increases attain the 0.05 level on Duncan's Multiple Range test. If Unit 5 is removed, the cases showing greater scores on Observation 5 than on the observation immediately preceding the initial training intervention increase to exactly 80 percent of the total cases. Differences between Now and Ideal scores are minor.

This regression suggests a kind of post-learning slump, a "two-steps-forward-and-one-step-back" occurrence. Roughly, regression occurs as some, but not all, of the learning is being consolidated or applied. The underlying notion is one of building plateaus as bases for further learning, a kind of consolidating of gains and of equilibrating expectations to reality.

Expectation 4

The common Reinforcement Session had the anticipated effect of increasing Profile scores, on balance, which supports Expectation 4. The pattern is especially marked for the Now scores; nearly 80 percent of these scores show greater Profile scores for Observation 6 than for 5. However, approximately one in seven of the increases are less than 1.0 changes on the 20-point Likert Profile, and only two of the increases achieve the 0.05 level on the Duncan test.

The Reinforcement Session has less of an impact on the Ideal scores. Specifically, about 65 percent of the Ideal scores are greater for Observation 6 than 5, and only three increases in 216 cases reach the 0.05 level. The data for Ideal scores further urge the notion that they tend to increase early in the change program, even in anticipation of the training design. Consistently, one-third of the increases after the Reinforcement Session amount to changes of less than 1.0 on Likert scores. The image is one of rising expectations about desired interpersonal and intergroup relations, followed by actual changes in those relations. This effect was not observable in the pilot study due to the extended periods between observations.

Another way of looking at the effects of the Reinforcement Session is to estimate the changes that occurred between early observations and

Observation 6, which follows the common training experience. Compare Observation 2 and 6, for example. Nearly 88 percent of the Profile scores increase over that interval, although only 12 of 216 increases attain the 0.05 level, as determined by Duncan's Multiple Range test. No decreases attain the 0.05 level.

Expectation 5

The divisional managers show a somewhat more positive pattern of changes on the Likert Profile than the five groups of their subordinate regional managers. There are many ways of suggesting the point. For example, the divisional managers clearly met two major expectations in more cases than the regionals. In summary,

Divisional Managers		*Regional Managers*
92%	Increases in Profile scores after X	77%
100%	Increases in Profile scores after R	73%

Expectation 5 rests basically on greater opportunities for testing and validation open to the divisional managers concerning, for example, the benign intentions of the Manager, National Field Sales, over the 245-day period of observation. If nothing else, the divisional managers could directly observe evolving changes in the Manager's values and behaviors, since they had numerous contacts with him in the period surrounding the training. Consequently, divisional managers would be more likely to modify their values and behavior earlier and more markedly than their subordinates, the regional managers. For the regional managers, their initial testing for change was basically confined to the brief confrontations programmed into the training design. The confrontations were difficult arenas in which to reflect authenticity and openness, and the manager's success varied greatly from case to case.

CONCLUSION

Two conclusions are implicit in the data above. First, the training design did not lead to any major unexpected consequences. The pattern of change was anticipated, even in substantial detail in some cases. Even in a more complex organization in a harsh business environment, the training design seems capable of helping to induce major changes in the patterns of interpersonal and intergroup relations, both existing and desired.

Second, the design had regular, if not massive, effects, which are difficult to dismiss. However, the magnitude of changes is such that statistically random variation might explain the changes in Profile scores.

Some reasons for the smaller changes seem obvious enough. Patently, we may have generated more evidence that complex systems are more resistant to change than simpler ones. Alternatively, the training design in the present case may somehow have had less of an impact. Very likely, in addition, environmental differences may have been crucial intervening variables. The pilot study dealt with units that had a bullish future. They had major problems, but those were associated with expanding markets and a growing staff and major promotion possibilities. The units in the present study faced a more uncertain future, perhaps even a dismal one. Significant personnel reductions were a real threat; traditional product lines no longer had the magic of yesteryear; and the bloom was definitely "off the rose" in terms of near-term potential, both in their organization and in their industry. At best, they were involved in a holding action. Reasonably, the units in the present study would generally constitute a more difficult target for a program of organization change.

Given these working explanations, indeed, one can persuasively argue that the smallish magnitudes of change are only apparent because interpersonal and intergroup relations were severely stressed during the period of training and observation. The smallish increases observed in Likert scores, in this view, must be considered in the context of major decreases that could have occurred in the absence of the program. Breaking-even may also be quite a feat under some circumstances, epigrammatically.

The basic thrust of this study also deserves direct statement. The gross aim of the statistical analysis here is to expose patterns inherent in the data. A variety of straightforward comparisons were made above, usually with techniques of modest power which did not imply conditions that overpower the data. For example, separate analyses of variance were run on the data, and the results support the pattern of results sketched above. Those results are not reported here due to their complexity, and also because the technique imposed conditions which the data did not always meet.

The concern about not overpowering the data with techniques derives from the properties of the measuring instrument used as well as exigencies of the research design. Data collected with the Likert Profile instrument are ordinal at best, which implies some indeterminacy in the use (or misuse) of parametric tests such as analysis of variance and Duncan's Multiple-Range test. Moreover, the Likert scale is attenuated at its top end, leading to a cluster of scores, particularly Ideal scores, as an artifact of the measuring instrument. An additional problem is encountered in the short version of the Likert Profile, Form S, used here. No effort is made to control for "response set" problems on Form S. However, use of the short form was dictated here by the expectation of respondent fatigue over repeated administrations. The problems created by this tradeoff are serious and are aggravated even more by the requirement of anonymity imposed on the research. This condition made it imposible to check in any systematic manner for possible autocorrelation effects across administrations.

While such problems are serious, they are not considered overpowering. Such problems are to be expected in an essentially natural history inquiry such as this. The need now is to devise both more rigorous research designs and more sensitive measuring instruments with which to monitor subsequent replications of the training design.

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